Illinois Air Toxics: Two Examples of Screening-Level Assessments

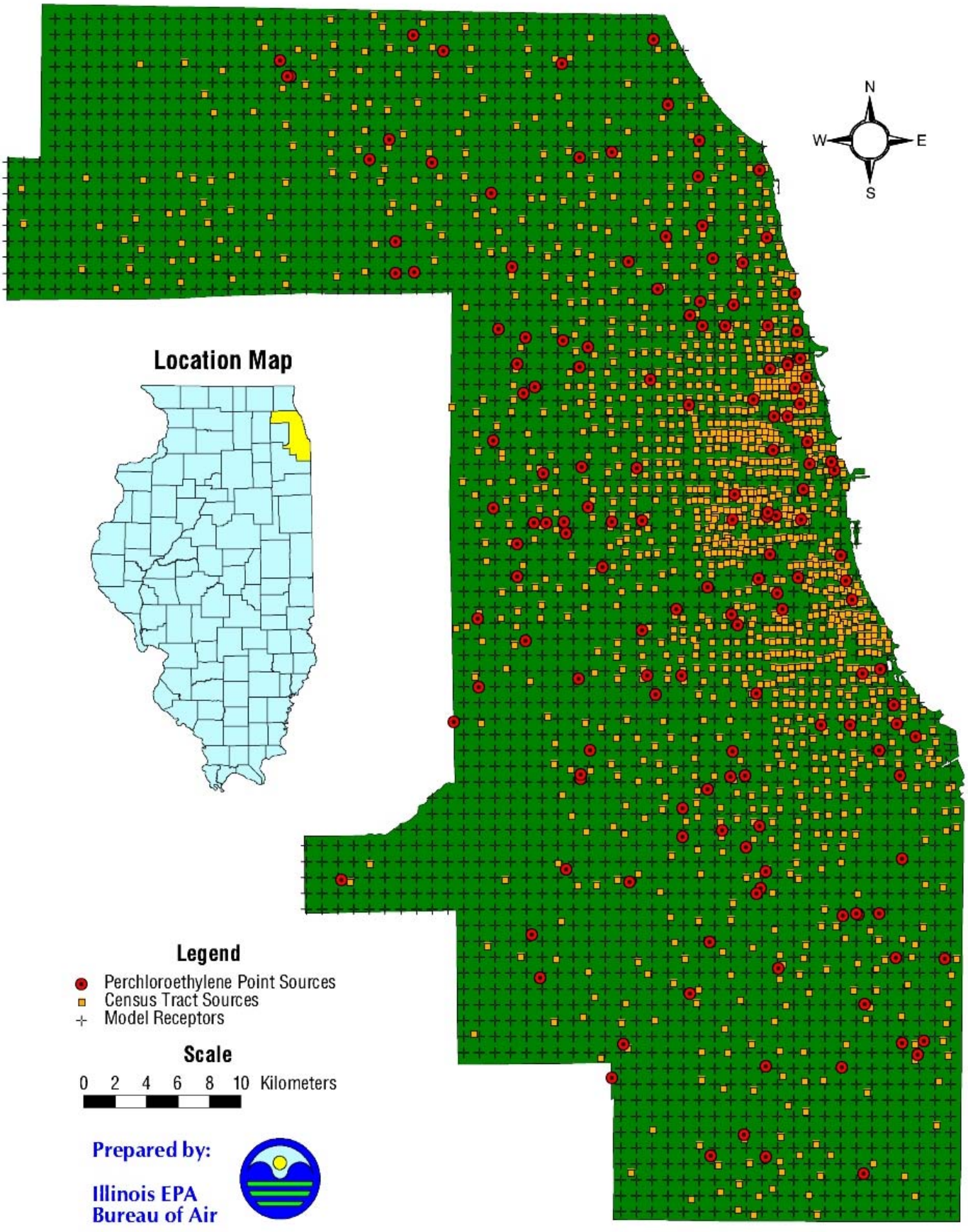
Presented at:
Air Toxics Risk Assessment Modeling Tools Symposium
Chicago, Illinois
July 15, 2003

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR

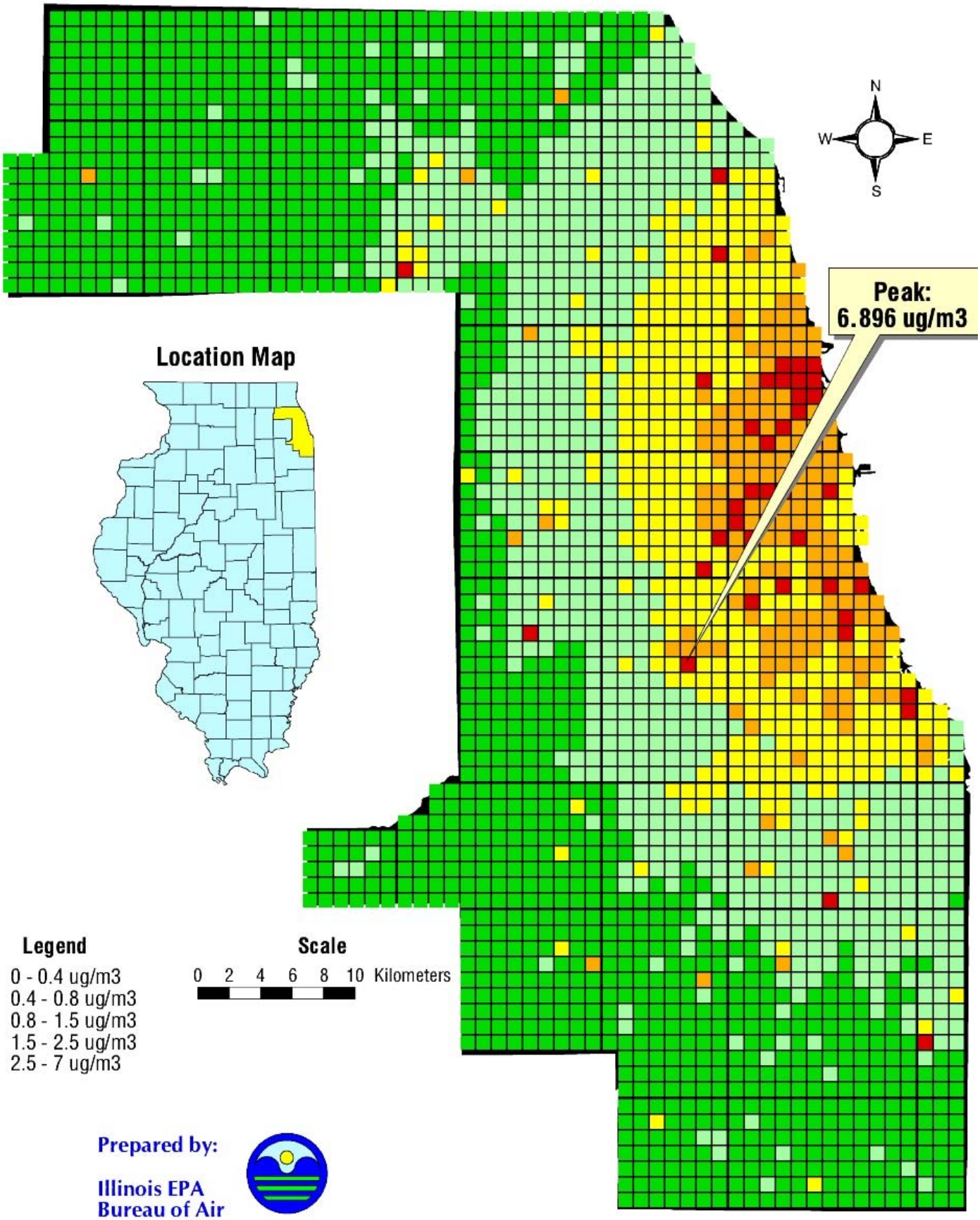
Cook County, Illinois Perchloroethylene Modeling

- Objective: "Baseline" for Residual Risk Analysis
  - Part 65 Subparts M, T, AAAA - MACT Standards promulgated 9/93, 12/94, 1/03
  - Statutory deadlines for residual risk analysis 9/01, 12/02, 1/09
- Model & Methodology: ISC3 with regulatory default options
  - 1997 Point, Area Source Inventories
  - 1988-1992 Meteorology
  - flat terrain; rural dispersion coefficients 1 km receptor spacing

Cook County Perchloroethylene Modeling Inputs



Modeled Cook County Perchloroethylene Concentrations
1990 Meteorology



Prepared by:

Illinois EPA
Bureau of Air

Cook County, Illinois Perchloroethylene Modeling

- Results:
  - Maximum Hazard Rating = 4.05

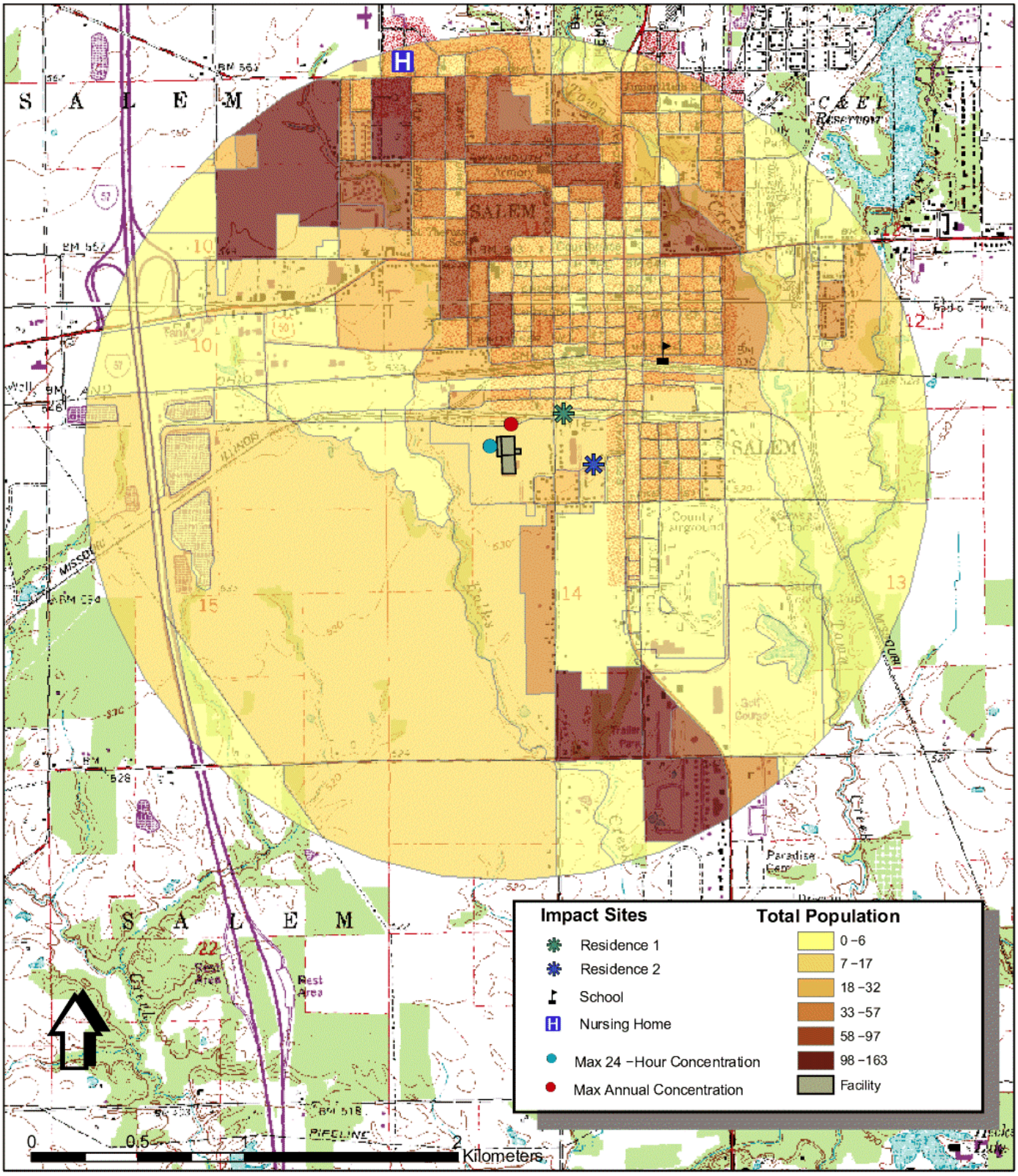
    (ratio of maximum annual average concentration to screening level air concentration at 10^{-6} risk)

- Issues:
  - Uses simplifying modeling assumptions that may be unacceptable (e.g., No emissions variability, No depletion or chemical transformation)
  - A level of analysis and sophistication beyond "screening" (refined exposure assessment, risk characterization)

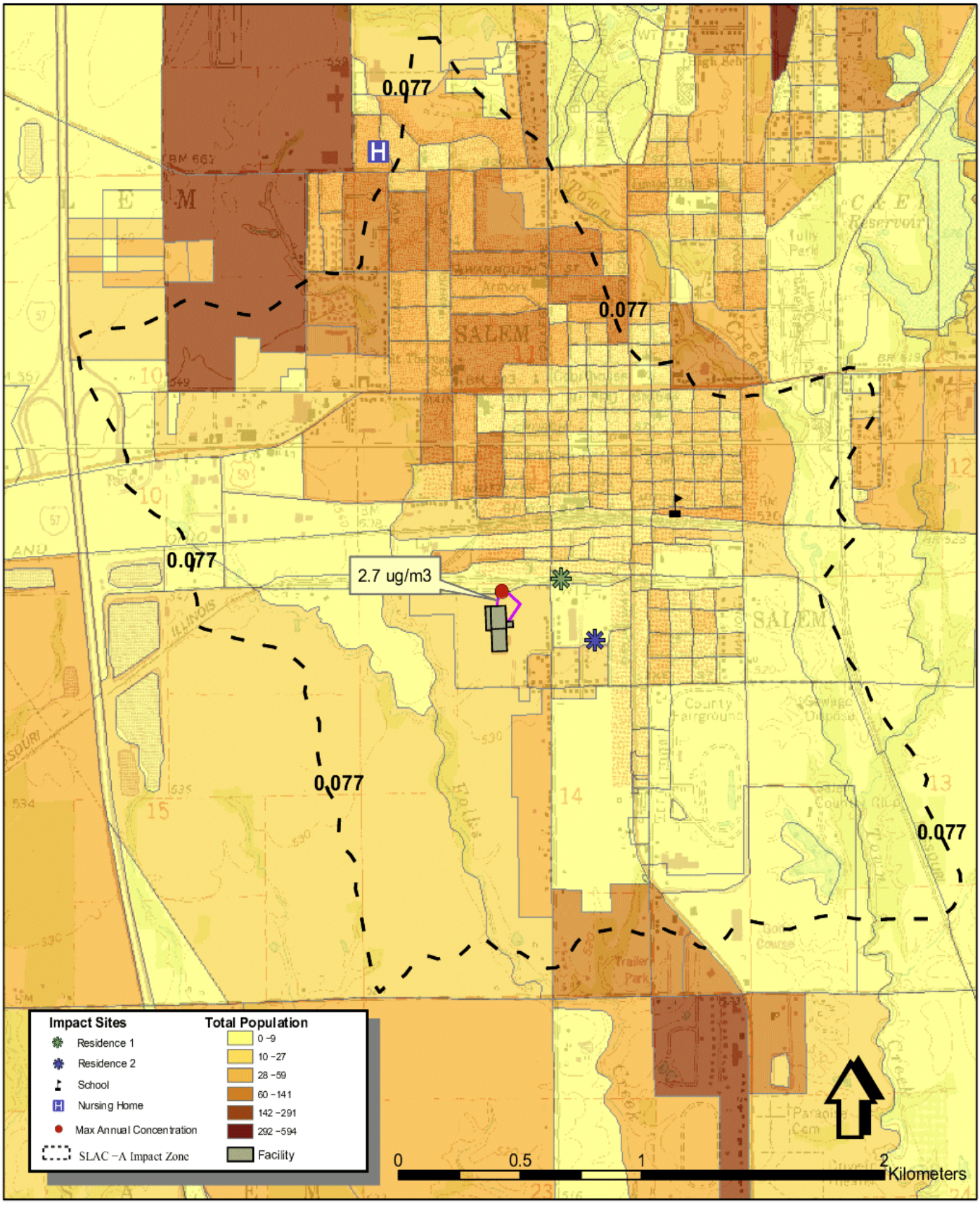
Study of Radiac Abrasives Plant Salem, Illinois

- History of Odor Complaints since 1994
  - Small urban population
- Significant air emissions of formaldehyde, phenol, ammonia and naphthalene
- Secondary Hazard Analysis using ISCST3 Model
  - Max Impact, sensitive receptors
  - Population impact

Radiac Abrasives Inc. Max Concentrations within Impact Area



SLAC −A Impact Zone of Formaldehyde for Radiac Abrasives Inc.



Radiac Study Results for Formaldehyde

- 43% of total population at risk within SLAC-A isopleth boundary
- 2% of at-risk population resides in sensitive locations
- Measures were taken to control formaldehyde
  - Reformulated adhesive
- Issues

Illinois View of Future Risk Assessment Issues

- Neighborhood-based projects focusing on air toxics impact on specific area;
- Risk assessment for Air Toxics “Hot Spots”;
- Residual risk for Post-MACT under CAA Section 112(f);
- Risk assessment for Urban Air Toxics Strategy, Section 112(k) of the CAA;